

# Claims

1. A silicon-containing liquid composition having a water concentration of 50% by weight or more and a light transmittance of 70% or more, wherein the silicon-containing liquid composition is a composition capable of forming a film on a substrate having a water contact angle of 60° or more.

2. The silicon-containing liquid composition according to claim 1, wherein the substrate is a substrate covered with an organic substrate or an organic film.

3. The silicon-containing liquid composition according to claim 1 or 2, which comprises the following components (A) to (E) and wherein the concentration of the component (A) is 6% by weight or less calculated as SiO<sub>2</sub> and the concentration of the component (C) is 50% by weight or more:

Component (A): an organosilicate or an oligomer thereof, 100 parts by weight calculated as SiO<sub>2</sub>,

Component (B): a catalyst for hydrolysis and condensation, 0.1 to 10 parts by weight,

Component (C): water, 100 to 50000 parts by weight,

Component (D): an organic solvent, 100 to 50000

parts by weight, and

Component (E): an aqueous resin component, 10 to 1000 parts by weight as a solid matter.

5           4. The silicon-containing liquid composition according to claim 1 or 2, which comprises the following components (A) to (E) and wherein the concentration of the component (A) is 6% by weight or less calculated as  $\text{SiO}_2$  and the concentration of the component (C) is 50% by weight  
10 or more:

Component (A): an organosilicate or an oligomer thereof, 100 parts by weight calculated as  $\text{SiO}_2$ ,

Component (B): a catalyst for hydrolysis and condensation, 0.5 to 5 parts by weight,

15           Component (C): water, 500 to 25000 parts by weight,

Component (D): an organic solvent, 200 to 10000 parts by weight, and

Component (E): an aqueous resin component, 10 to 1000 parts by weight as a solid matter.

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5. The silicon-containing liquid composition according to any one of claims 1 to 4, which contains a surface tension depressant as a component (F) in a concentration of 0.1 to 2.0% by weight.

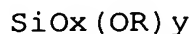
25           6. The silicon-containing liquid composition

according to any one of claims 1 to 5, wherein the component (E) is an aqueous emulsion.

7. The silicon-containing liquid composition according to claim 6, wherein the component (E) is an aqueous emulsion selected from (meth)acrylic resin-based, styrene-acrylic resin-based, acrylic silicon resin-based, fluororesin-based, urethane resin-based, and urethane-acrylic resin-based ones.

8. The silicon-containing liquid composition according to any one of claims 1 to 7, wherein the component (A) is methyl silicate or an oligomer thereof.

9. The silicon-containing liquid composition according to any one of claims 1 to 8, wherein the component (A) is represented by the following formula:



wherein  $0 \leq x \leq 1.2$ ,  $1.6 \leq y \leq 4$ , and  $2x + y = 4$ .

10. A silicon-containing liquid composition, which comprises the following components (A) to (E) and wherein the concentration of the component (A) is 6% by weight or

less calculated as  $\text{SiO}_2$  and the concentration of the component (C) is 50% by weight or more:

Component (A): an organosilicate or an oligomer thereof, 100 parts by weight calculated as  $\text{SiO}_2$ ,

5       Component (B): a catalyst for hydrolysis and condensation, 0.1 to 10 parts by weight,

Component (C): water, 100 to 50000 parts by weight,

Component (D): an organic solvent, 100 to 50000 parts by weight, and

10       Component (E): an aqueous resin component, 10 to 1000 parts by weight as a solid matter.

11. A silicon-containing liquid composition, which comprises the following components (A) to (E) and wherein  
15       the concentration of the component (A) is 6% by weight or less calculated as  $\text{SiO}_2$  and the concentration of the component (C) is 50% by weight or more:

Component (A): an organosilicate or an oligomer thereof, 100 parts by weight calculated as  $\text{SiO}_2$ ,

20       Component (B): a catalyst for hydrolysis and condensation, 0.5 to 5 parts by weight,

Component (C): water, 500 to 25000 parts by weight,

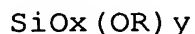
Component (D): an organic solvent, 200 to 10000 parts by weight, and

25       Component (E): an aqueous resin component, 10 to

1000 parts by weight as a solid matter.

12. The silicon-containing liquid composition according to claim 10 or 11, which contains a surface tension depressant as a component (F) in a concentration of 0.1 to 2.0% by weight.

13. The silicon-containing liquid composition according to claim 10 or 11, wherein the component (A) is represented by the following formula:



wherein  $0 \leq x \leq 1.2$ ,  $1.6 \leq y \leq 4$ , and  $2x + y = 4$ .

14. A process for producing the silicon-containing liquid composition according to any one of claims 1 to 13, which comprises mixing components (A) to (D) so that the concentration of the component (A) becomes from 2 to 6% by weight calculated as  $\text{SiO}_2$  to achieve hydrolysis and condensation of the component (A), subsequently adding the component (C) and/or the component (D) to dilute the mixture two times by weight or more, and adding a component (E) or a component (E) and a component (F) thereto.

15. A coating process which comprises applying the silicon-containing liquid composition according to any one of claims 1 to 13 onto a surface of a substrate and drying the composition to form a coated film.

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16. A coated film formed by applying the silicon-containing liquid composition according to any one of claims 1 to 13 onto a substrate.

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17. The coated film according to claim 16, which is colorless and transparent.

18. The coated film according to claim 16 or 17, wherein a water contact angle is  $60^\circ$  or less.

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19. The coated film according to any one of claims 16 to 18, wherein change in whiteness ( $\Delta L$ ) of the coated film subjected to an exposure test according to the following exposure test method is 5 or less, the exposure test method being as follows: an outdoor exposure test is performed for three months according to the JIS Z2381 direct exposure test method, provided that an exposure angle is  $60^\circ$  from a horizontal plane.

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